Proposed Plan

Hatheway & Patterson Superfund Site

June 2005

Cleanup Proposal At A Glance

After careful study of the Hatheway and Patterson Superfund Site, The United States Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) are proposing the following cleanup plan to address the contamination at the Site. The plan is based on a future use scenario of commercial/open space for the Mansfield portion of the Site and a smaller area for residential use in Foxborough. The plan also assumes that groundwater at the Site is not available for drinking water by future users of the Site, therefore no active cleanup measures are planned for groundwater under the Site.

- Approximately 31,000 cubic yards of soil exceeding cleanup levels will be excavated.
- The buildings in and near Hatheway & Patterson's old manufacturing space will be demolished to allow the waste in place under them to be addressed. Excavated soil will be replaced with clean backfill.
- Soils containing pentachlorophenol (PCP), semi-volatile organic compounds (SVOCs), and arsenic will be excavated, tested for leachability and, if they fail, stabilization agent(s) will be utilized. The stabilized soils will then be consolidated on-site under a low-permeability cover.
- Soils containing dioxin and oily material will be disposed of off-site at a licensed facility.
- Institutional controls will prohibit the use of site groundwater and restrict residential land uses. Soil exposures within the area of the existing railroad right of way will be evaluated during design and appropriate action such as deed restrictions and fencing will be implemented if necessary.
- Long term monitoring of ground water and surface water, Five-year reviews, and operation and maintenance of remedial components, including the low permeability cover will be performed.

Come to a Public Meeting to Learn More

Learn more about EPA's proposed cleanup plan at a public meeting scheduled for June 16, 2005 at the Mansfield Town at 7pm. At the meeting, EPA will summarize the cleanup proposal and will be available to respond to your questions and concerns.

Your Opinion Counts!

EPA is accepting public comment on this cleanup proposal from June 17, 2005 to July 18, 2005. If you have comments regarding EPA's proposed cleanup plan for the site, we want to hear from you before making a final decision.

Public Information Meeting for the Proposed Cleanup Plan

7:00 – 9:00 p.m., Thursday, June 16, 2005

Public Hearing for the Proposed Cleanup Plan

7:00 – 9:00 p.m., Thursday, July 7, 2005

Both events will be held at the:
Mansfield Town Hall, Room 3A/B
Six Park Row, Mansfield, MA

To provide formal comment, you may offer oral comments during the public hearing or send written comments postmarked no later than July 18, 2005 to:

Dave Lederer
EPA - New England, Region 1
1 Congress Street
Suite 1100
Boston, MA 02114-2023

E-mail: Lederer.dave@epa.gov

For more information about the proposed plan, meetings, or should you have specific needs about the facility and it's accessibility, please contact EPA Community Involvement Coordinator, Pamela Harting-Barrat (toll free) 888 372-7341 x 81318

In accordance with the Comprehensive Environmental Response, Compensation and Liability Act, (Section 117) the law that established the Superfund program, this document summarizes EPA's cleanup proposal. For detailed information on the options evaluated for use at the site, see the Feasibility Study available for review on-line at ***www.epa.gov/region01/superfund/sites/hatheway*** *or the information repository at the Mansfield Public Library and at EPA's 1 Congress Street office in Boston*

Hatheway & Patterson Site History

In 1972, a tar seep was discovered on the banks of the Rumford River on the southern portion of the property. In 1973, test wells, as well as a collection pit and a collection trench, were installed to pump oil-contaminated ground water. Ground water pumping operations were conducted through 1982.

In late 1980's, Hatheway & Patterson performed an investigation of the property under state authority. Contamination was found in soil, groundwater and surface water. In June 1990, after a period of heavy rainfall, "oily seepage" was again reported on the Rumford River in the vicinity of the Hatheway & Patterson property.

In 1991, Hatheway & Patterson constructed a collection trench along the eastern bank of the Rumford River to intercept ground water and oils migrating to the River. This trench was retrofitted one year later to function as a groundwater treatment system.

In 1993, Hatheway & Patterson filed for bankruptcy protection and manufacturing operations ceased at the Site. Wood-treatment chemicals, as well as sludges were left in tanks, sumps and drums on the abandoned property.

In 1993 and 1994, EPA initiated an Emergency Removal Action (ERA) due to the presence of tanks containing hazardous waste materials located inside and outside the buildings. All virgin wood-treating solutions were shipped to other wood-treating facilities and liquid and solid wood-treating wastes were disposed of off-site. In 1995, based on the elevated concentrations of arsenic detected in Site soils, several areas of the property received temporary geotextile/gravel and/or asphalt cover to limit potential exposure.

In the Fall of 1998, EPA collected sediment, fish tissue, and surface water samples from the Rumford River at locations upstream, adjacent to and downstream of the property, including Fulton Pond and Kingman Pond.

In 2000, the Town of Mansfield conducted an environmental investigation at the Site through EPA's Brownfields Pilot Program. Subsequently, the Town received a Site reuse grant from EPA to investigate and solicit ideas on the potential reuse of the Site.

In 2002, EPA added the Site to the Agency's National Priority List (NPL). In August 2003, the EPA removed 376 tons of contaminated soil from both sides of Country Street when arsenic contamination was discovered.

Site Background

The Hatheway and Patterson Site, a former wood treatment facility, consists of approximately 38 acres in the town of Mansfield MA and approximately 2 acres in the neighboring town of Foxborough MA. See Figure 1. The company declared bankruptcy and has not participated in the cleanup of the site since 1993. Presently soil and groundwater at the Site are contaminated with arsenic, pentachlorophenol, dioxin, other organic solvents and oily material related to wood treatment operations at the Site. Both the United States EPA and the Massachusetts Department of Environmental Protection (MA DEP) have been involved in addressing Site contamination.

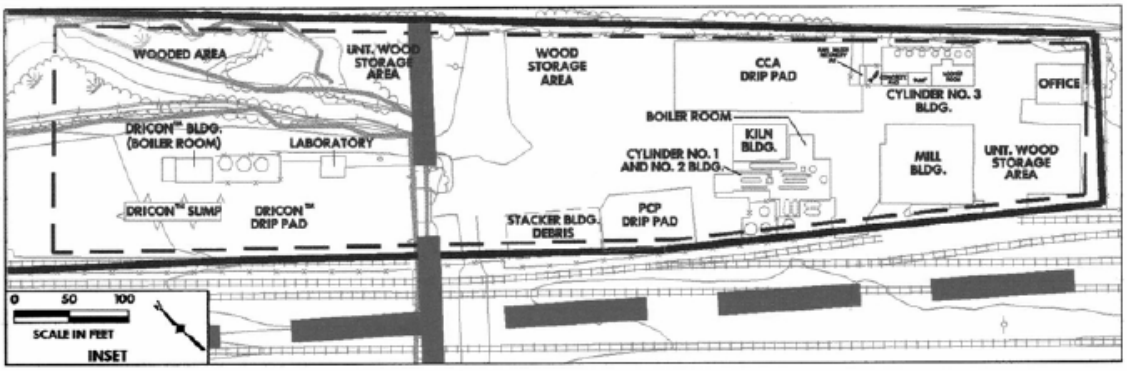
Why is Cleanup Needed?

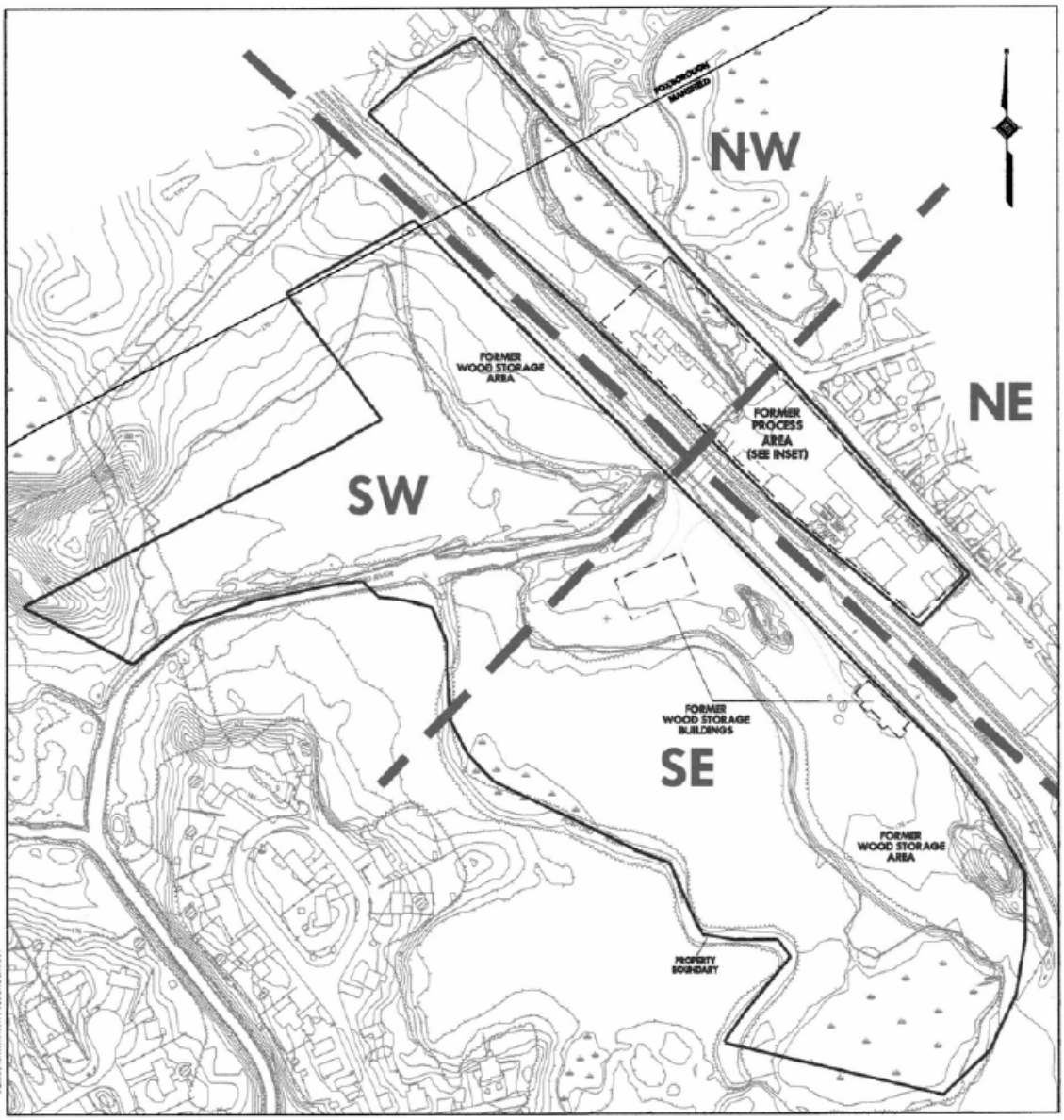
The Hatheway & Patterson Site, shown in Figure 1, is split into two sections by the railroad tracks. North of the tracks is a predominantly flat area known as the 'operations area' or 'process area' on which most of the production activities at the Site took place. From the tracks extending to the southern and western boundaries of the Site, the land slopes down to the Rumford River and an area predominately covered with wetlands.

Operations at the Site included the preservation of wood sheeting, planking, timber, piling, poles and other wood products. Wood treatment was accomplished by a variety of methods that changed over time. The primary contaminants identified in the Site soils include heavy metals such as arsenic and chromium, and semi-volatile organic compounds such as pentachlorophenol ('PCP). Dioxin, a common contaminant in PCP, has also been found at the Site. The LNAPL ("Light Non-Aqueous Phase Liquid) contaminated soil at the Site is thought to be related to the use of fuel oil in the processes described above.

Site Groundwater

Among the main contaminants found in Site groundwater are arsenic, chromium, pentachlorophenol (PCP), and LNAPL (separate phase oil). EPA's Remedial Investigation (RI) concluded that contaminated groundwater has apparently not migrated off-site because the Rumford River is acting as a barrier to further migration.





0 225 450
SCALE IN FEET

Figure 1
SITE LAYOUT
HATHEWAY AND PATTERSON SITE
15 COUNTY ROAD
MANSFIELD, MASSACHUSETTS

Metcalf & Eddy

TRC
Scott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

TRC PROJ. NO.: 02136-0490-01X30

EPA CONTRACT NO.: 68-W6-0042

RAC SUBCONTRACTOR: 107061

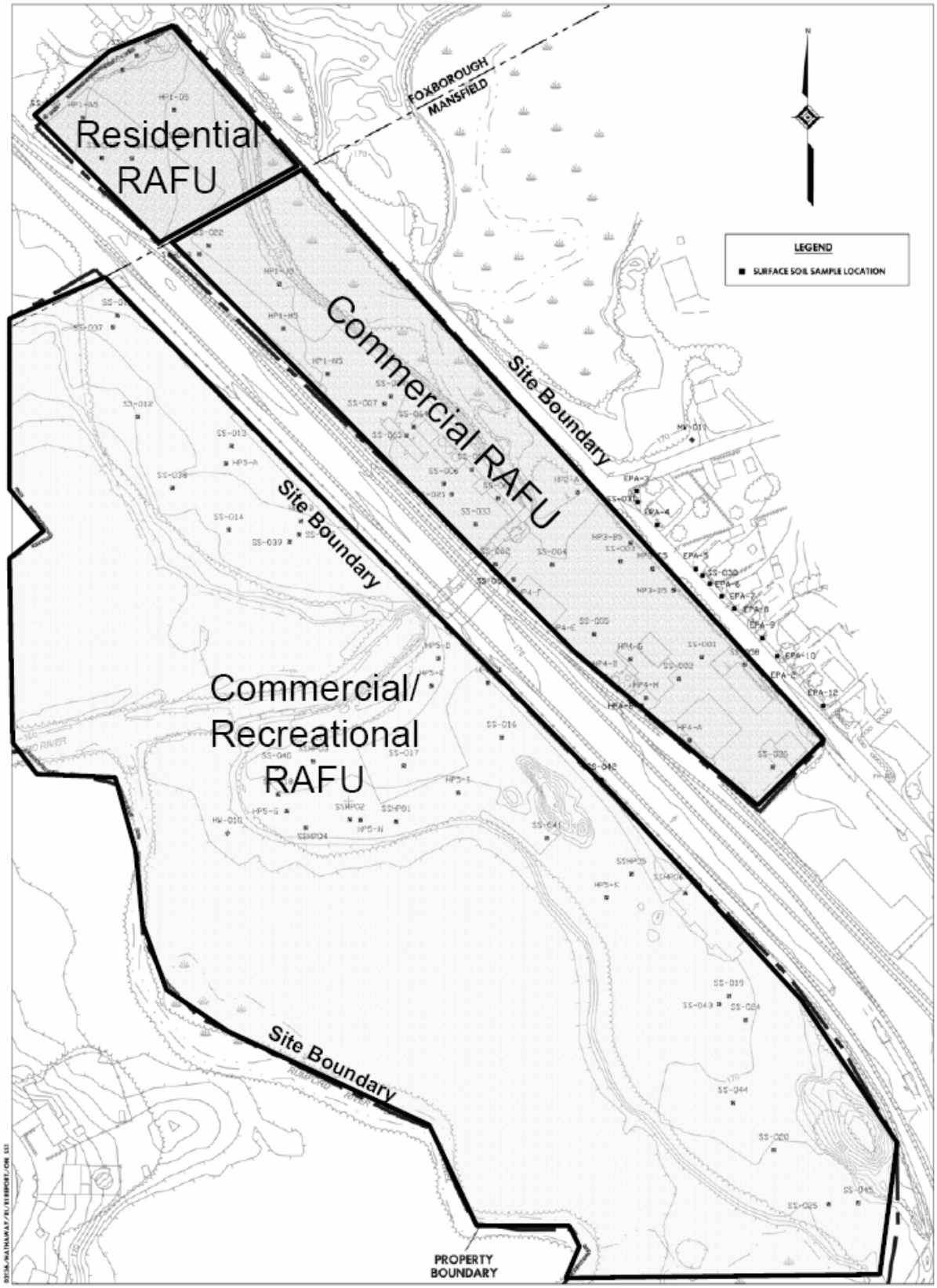


Figure 2
Reasonable Anticipated Future Use (RAFU)

HATHEWAY AND PATTERSON SITE
15 COUNTY ROAD
MANSFIELD, MASSACHUSETTS

Metcalf & Eddy

TRC
Booth Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

TRC PROJ. NO.: 02136-0490-01X39

EPA CONTRACT NO.: 68-W6-0042

RAC SUBCONTRACT NO.: 107051

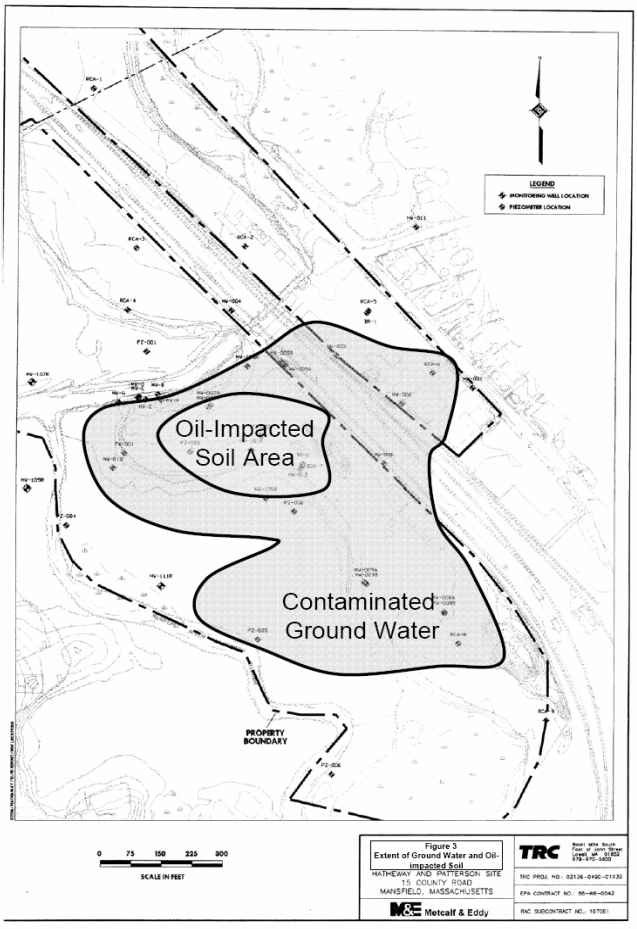
Figure 3 shows the approximate location of groundwater contamination found in groundwater monitoring wells.

The Site and its surrounding area are currently served by municipal drinking water. The Massachusetts DEP has issued a 'Groundwater Use and Value Determination' for the Site. In part, the document stated that "the ground water beneath and in the vicinity of the Site is not classified as a current or potential water supply'. DEP also noted that the aquifer underlying the Site is classified as *low yield* by the United States Geological Survey. The Site area aquifer is classified by the State as both GW-2 (areas where there is a potential for migration of vapors to occupied structures) and GW-3 (considers impacts and risks associated with the discharge of groundwater to surface water). It is important to note that the Human Health Risk Assessment for the Site indicates that there is no significant risk from migration of vapors from groundwater.

In light of the use and value factors as well as other criteria established in the Massachusetts Contingency Plan (MCP) that were examined in their determination, the Department recommended a low use and value for the Site groundwater. A low determination by a state means that EPA will not consider groundwater under the Site suitable for drinking water. EPA is therefore not proposing to restore the groundwater aquifer under the Site to drinking water standards (or 'Maximum Contaminant Levels, or 'MCLs) under the Federal Safe Drinking Water Act (SDWA). However, MCLs will be used to measure the performance and effectiveness of the preferred alternative via groundwater monitoring wells installed to ensure that onsite groundwater above MCLs is not migrating to offsite receptors.

Similarly, ambient surface water quality criteria (AWQC) will be used to measure the performance and effectiveness of the preferred alternative in preventing Site groundwater discharges from causing surface water (the Rumford River) to exceed AWQCs. The preferred alternative will also include Institutional Controls (ICs) to prevent uses of the groundwater that are inconsistent with the exposure assumptions in the Human Health Risk Assessment. The objectives of the cleanup (which EPA calls "Remedial Action Objectives" or "RAOs") are designed to protect GW-2 and GW-3 uses as well as to protect ecological resources.

Figure 3



Future Use of the Site

The Town of Mansfield has notified EPA that the reasonably anticipated future land use (RAFU) of the portion of the Site located in Mansfield will be commercial use for the front parcel located on County Street (north of the railroad tracks) and open space or commercial, whichever is considered the higher standard of cleanup, for the back parcel (south of the railroad tracks). EPA has determined, through risk calculations that commercial use results in greater exposure to contaminants and cleanup levels were set to accommodate that use. This will allow either commercial or open space use in the future at the Site. However, because contamination above residential cleanup levels will remain on the Town of Mansfield's portion of the Site, Institutional Controls (ICs) are part of the preferred alternative. ICs will prevent uses that are inconsistent with the exposure assumptions in the Human Health Risk Assessment for the Site.

The 1.77 acre portion of the Site located in Foxborough is in a Residential and Agricultural District (R-40). Currently, the parcel is unused and during Hatheway & Patterson operations it may have been used for wood storage. The Feasibility Study (FS) assumes the future use to remain residential and cleanup levels for residential use of this portion of the Site are included in the preferred alternative.

In the Feasibility Study, EPA evaluated each cleanup alternative against these reasonable future use assumptions for exposure. See Figure 2 to see the future use assumptions for each portion of the Site**.** See the Baseline Risk Assessment for a discussion of all exposure scenarios considered for the Site.

Human Health Risks

Based on the assumptions about land use and exposure described above, the following pathways resulted in unacceptable human health risks at the Site.

Process Area (north of the railroad tracks)

- *Ingestion and dermal contact with surface soils* to future on-site residents, future town, commercial and utility workers, and current and future adolescent trespassers.
- *Ingestion and dermal contact with subsurface soils* to future on-site residents and future commercial workers.

On-site Groundwater (contaminant plume)

- *Dermal contact with and use of shallow (overburden) and deep (bedrock) groundwater as drinking water* to offsite residents should the contaminated groundwater migrate offsite.

- *In addition, dermal contact with and use of shallow groundwater to fill swimming pools* of offsite residents should the contaminated groundwater migrate offsite

Ecological Risks

A Baseline Environmental Risk Assessment (BERA) was performed in 2004 for the Rumford River at the Site. The BERA concluded that no significant risk is expected for benthic macroinvertebrates, water column invertebrates, fish, as well as piscivorous (fish eating) birds and mammals.

Several potential vernal pools have been identified at the Site. **(Figure 4)** A vernal pool is a depression which is wet on a seasonal basis and which serves as a nursery for frogs and salamanders. The potential vernal pools showed apparent signs of impairment. Further study will be conducted during remedial design to determine if contamination in sediment and/or surface water poses a risk to these areas and whether threatened or endangered species or habitat are impacted.

Risk Assessment Conclusion

Actual or threatened releases of hazardous substances from this Site, if not addressed by the proposed cleanup plan or other active measures considered, present current and future threats to public health, welfare, or the environment.

Remedial Action Objectives and Preliminary Remediation Goals

Remedial Action Objectives (RAOs) and Preliminary Remediation Goals (PRGs) were developed by EPA in the Feasibility Study for soil and ground water. The PRGs are intermediate cleanup criteria designed to meet the Remedial Action Objectives (RAOs). The finalized set up PRGs will become "cleanup levels" when the Record of Decision is signed by EPA.

Remedial Action Objectives:

- Surface Soil (Process Area) – Prevent current and future users from ingesting or contacting surface soils contaminated with arsenic, dioxin pentachlorophenol and other Site contaminants that pose a risk to human health.

- Subsurface Soil (Process Area) – Prevent future users from ingesting or contacting subsurface soil contaminated with arsenic, dioxin, pentachlorophenol and other Site contaminants that pose a risk to human health.

- Sediment – Prevent ecological receptors from exposure to unacceptable risk from Site contaminants in potential vernal pool sediment and surface water if these areas are found to pose an unacceptable risk.

- Ground Water – Prevent discharge of pentachlorophenol and other COPCs to surface water at concentrations that would result in an instream exceedance of the Ambient Water Quality Criteria (AWQCs) through source control. Prevent exposure to ground water by future residents, recreational users, or commercial workers by monitoring extent of plume (to ensure it is remaining on-site) and implementing institutional controls to restrict ground water use within the Site boundary.

- Inter-Media Transfer - Eliminate or reduce potential leaching and inter-media transfer of Site contaminants from soil to groundwater and surface water.

- LNAPL (Free Product) – Prevent further contaminant transfer from LNAPL to groundwater by reducing LNAPL source material in soil excavation/treatment areas. Prevent further migration of LNAPL to groundwater and surface water by removing free product "hotspots" to the extent feasible.

Soil Preliminary Remediation Goals (PRGs)				
Compound	***Residential***		***Commercial/Open Space***	
	PRG (ppm)	***Basis***	***PRG (ppm)***	***Basis***
Benzo(a)pyrene	--**		2.1	1×10^{-5}
Dioxin TEQ*	--**		0.005	3×10^{-4}*
Arsenic	9.1	1×10^{-5}	16	1×10^{-5}
Pentachlorophenol	--**		90	1×10^{-5}
Cumulative Risk	**1×10^{-5}**		**3.3×10^{-4}**	

* Dioxin TEQ PRG set based on OSWER Directive 9200.4-26, April 13, 1998, Approaches for Addressing Dioxin in Soil at CERCLA and RCRA Sites. The cleanup level for commercial reuse is 5-20 ppb, while that for residential reuse is 1 ppb. The 5 ppb level is being proposed as the PRG for the commercial future use.

** The Residential RAFU portion of the site did not contain these contaminants at levels that exceeded the calculated PRGs.

Ground Water Preliminary Remediation Goals (PRGs)		
Compound	***PRG (ppb)***	***Basis***
Pentachlorophenol	1,792	AWQC
Arsenic	17,924	AWQC
Chromium	1,314	AWQC

Note:
PRGs represent maximum concentrations that are protective of ambient water quality criteria (AWQC) in the Rumford River under low flow conditions.

Cleanup Alternatives Considered for the Hatheway & Patterson Site

EPA looked at variety of different technical approaches to determine the best way to reduce the risks at the Hatheway & Patterson site for both soil and groundwater. During the comment period, EPA welcomes comments on the proposed cleanup plan, EPA's wetland impact determination and the cleanup alternatives summarized below. Please consult the Feasibility Study for more detailed information.

For Soil

RA-S1: No Action. The Superfund law requires EPA to consider an alternative in which it takes No Action. Contaminants in soil would remain in place. This alternative has no cost associated with it.

RA-S2: Monitoring and Institutional Controls. This alternative requires only institutional controls at the Site to mitigate risks from dermal contact and incidental ingestion of soil and to prohibit use of groundwater for potable uses. Land use restrictions could include health and safety requirements for any future subsurface work and restrictions on future use and redevelopment of the Site. This alternative also includes five-year reviews. The FS estimated cost of this alternative is $ 118,000.

RA-S3: Alternative RA-S3 is similar to the preferred alternative, RA-S4; however under this alternative, soils contaminated with organics such as dioxin, PCP, and LNAPL will be treated on site with a thermal desorption process in addition to the stabilization process. In a thermal desorption process, soil is heated to high temperatures which separates some contaminants from the soil in a gaseous phase. Volatilized compounds (in a gas phase) are then collected using a vapor extraction system. The relatively small volume extracted is then shipped off site for disposal at a licensed facility. The soil would be consolidated and stabilized under a low permeability cover. The FS estimated cost is $13,400,000.

RA-S4: This is the preferred alternative described on page 11.

RA-S5: This remedial alternative involves the excavation and off-site disposal of soil (and, if necessary, sediment) exceeding PRGs. As in the preferred alternative, soil would be excavated using conventional excavation equipment (i.e., backhoe, excavator) and transported off site by dump trucks or rail cars. Contaminated soil may be stored on a geotechnical barrier onsite for a short-period of time during excavation before being shipped offsite. The estimated cost of this alternative is $20,900,000.

For Groundwater

RA-G1: Take no action. Any reduction in risk at the Site would be accomplished through natural attenuation. There is no cost associated with this alternative. RA_G2: This is the preferred alternative described on page 11.

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A Closer Look at EPA's Proposed Remedy

RA-S4 –Off-Site Dioxin and LNAPL Soil Disposal, Stabilization of Remaining Contaminated Soils and Consolidation under Low Permeability Cover and RA-G2 Long-term Monitoring of Groundwater and Institutional Controls

Figure 5 shows a diagram of which areas will require remediation for this alternative. Figure 6 shows a conceptual layout of how this alternative will be implemented.

The buildings in the process area will be demolished in order to allow the waste in place under them to be addressed. Based on the relatively shallow depth of contamination, soil will be excavated using conventional excavation equipment (i.e., backhoe, excavator) and transported off site by dump trucks or rail cars. Some contaminated soil may be stored on a geotechnical barrier on-site for a short period of time during excavation before being shipped off-site.

Soils containing dioxin above PRGs will be disposed of offsite at a licensed facility.

Soils containing PCPs, SVOCs, and arsenic above PRGs will be excavated and tested for leachability. If these contaminants are found to leach, they will be stabilized in the soil using a stabilization agent, such as Portland cement. Treatability design studies will be completed to arrive at a suitable mixture of stabilization agent(s) for organic and inorganic contaminants to ensure the protectiveness of the remedy. The stabilized soils will then be consolidated on-site under a low-permeability cover. A cross-sectional view of the low-permeability cover is shown in **Figure 4**.

Soils contaminated with LNAPL located south of the railroad tracks in an area considered to be an LNAPL hot spot will be excavated down to the water table. Any floating free product will be removed at the same time to the extent practicable. LNAPL-contaminated soil will be sent offsite to a licensed disposal facility. Free product may be blended with the soil or containerized separately and sent offsite. LNAPL-contaminated soil outside the hot spot will be excavated to the extent it coexists with other contaminated soil targeted for excavation, treated similarly as that soil, and consolidated for disposal under the low permeability cover.

Excavated areas will be backfilled with clean soil. Affected wetlands will be restored. If further studies during design indicate a risk in the potential vernal pool areas, contaminated sediment in those areas may be excavated and consolidated under the low permeability cover and the vernal pool restored. If the pool is fed by contaminated groundwater, it may be filled in and replicated elsewhere.

Current information indicates soil PRGs are exceeded on the boundary of the existing railroad right of way passing through the Site. Soil exposures within the area of the existing railroad right of way will be evaluated during design and appropriate action such as deed restrictions and fencing will be implemented if necessary.

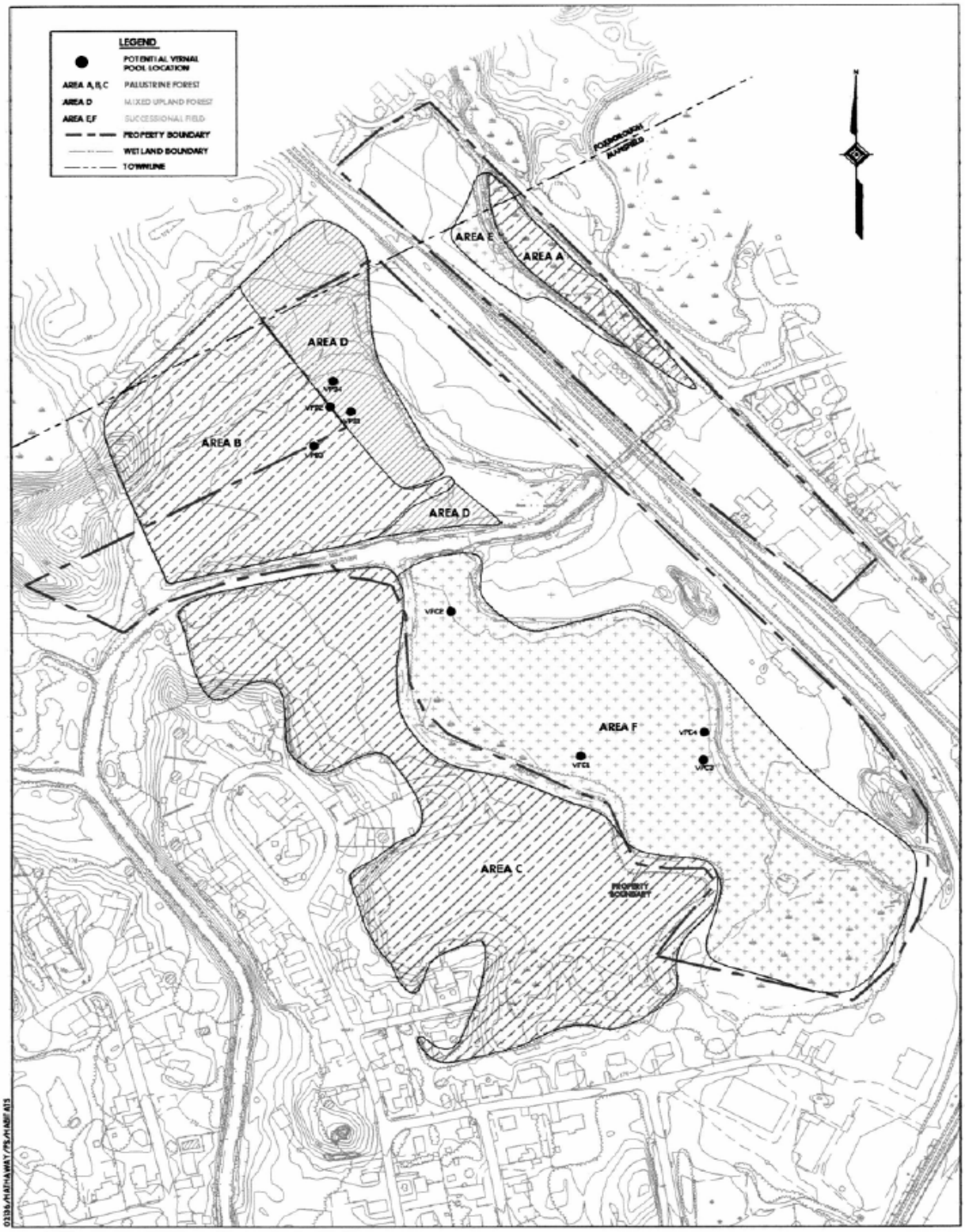
If necessary, site soils (and sediments if excavated) will be dewatered before final disposal. The resulting water will be treated to appropriate standards in an onsite mobile treatment facility before discharge to the Rumford River.

Long term monitoring of ground water and surface water will include sampling to ensure that groundwater contamination is not migrating to offsite receptors and that the Rumford River and site wetlands are protected. Institutional controls (such as deed restrictions) will prohibit the use of Site groundwater as drinking water.

The cover will be maintained in the long-term and five-year reviews will be conducted as long as waste remains in place.

Estimated Total Cost of the Preferred Alternatives for Source Control and Groundwater is $ 12,127,000.

Based on current information, EPA recommends this proposed cleanup plan because it is cost-effective yet still protective of human health and the environment. EPA believes the proposed cleanup plan achieves the best balance among the criteria used by EPA to evaluate alternatives. The proposed cleanup provides: short-term and long-term protection of human health and the environment; meets all Federal and State applicable or relevant and appropriate environmental requirements (ARARs); reduces the volume and mobility of contaminated soil and sediment and utilizes permanent solutions to the maximum extent practicable, by removing dioxin and LNAPL contaminated materials for off-site for disposal.



SOURCE:
DELINEATED HABITAT AREAS WHERE INTERPRETED FROM A MAP (NOT TO SCALE) PREPARED BY METCALF & EDDY, FINAL HABITAT EVALUATION SURVEY TECHNICAL MEMORANDUM, FIGURE 2, HATHAWAY & PATTERSON SUPERFUND SITE, MANSFIELD, MASSACHUSETTS, JANUARY 2002.

0 225 450

SCALE IN FEET

Figure 4

ECOLOGICAL HABITATS

HATHEWAY AND PATTERSON SITE
15 COUNTY ROAD
MANSFIELD, MASSACHUSETTS

Metcalf & Eddy

TRC
Scott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

TRC PROJ. NO.: 02136-0490-01X30

EPA CONTRACT NO.: 68-W6-0042

RAC SUBCONTRACT NO.: 107061

02136/HATHAWAY/FIGHABF.AI5

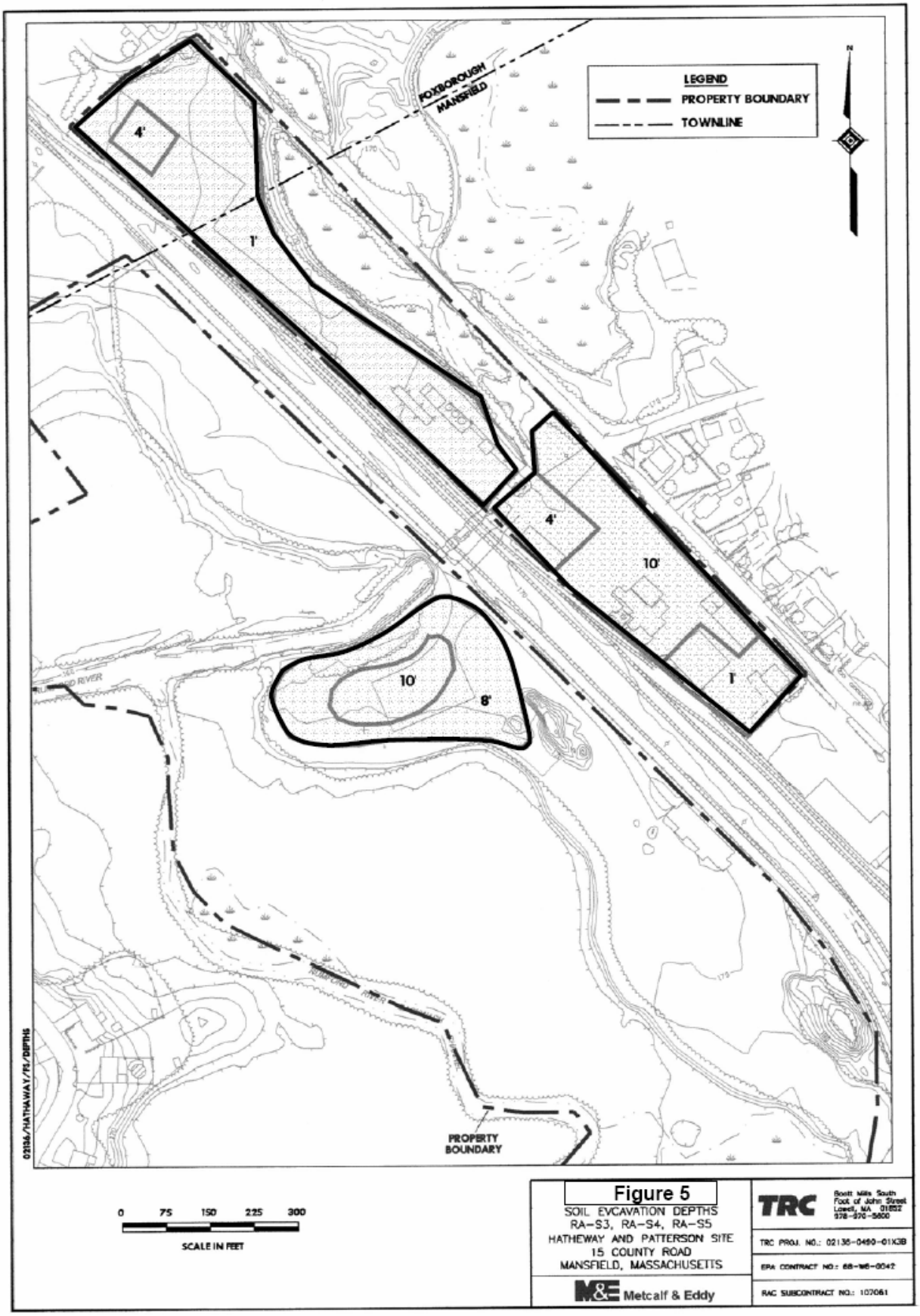


Figure 5

SOIL EVCAVATION DEPTHS
RA-S3, RA-S4, RA-S5
HATHEWAY AND PATTERSON SITE
15 COUNTY ROAD
MANSFIELD, MASSACHUSETTS

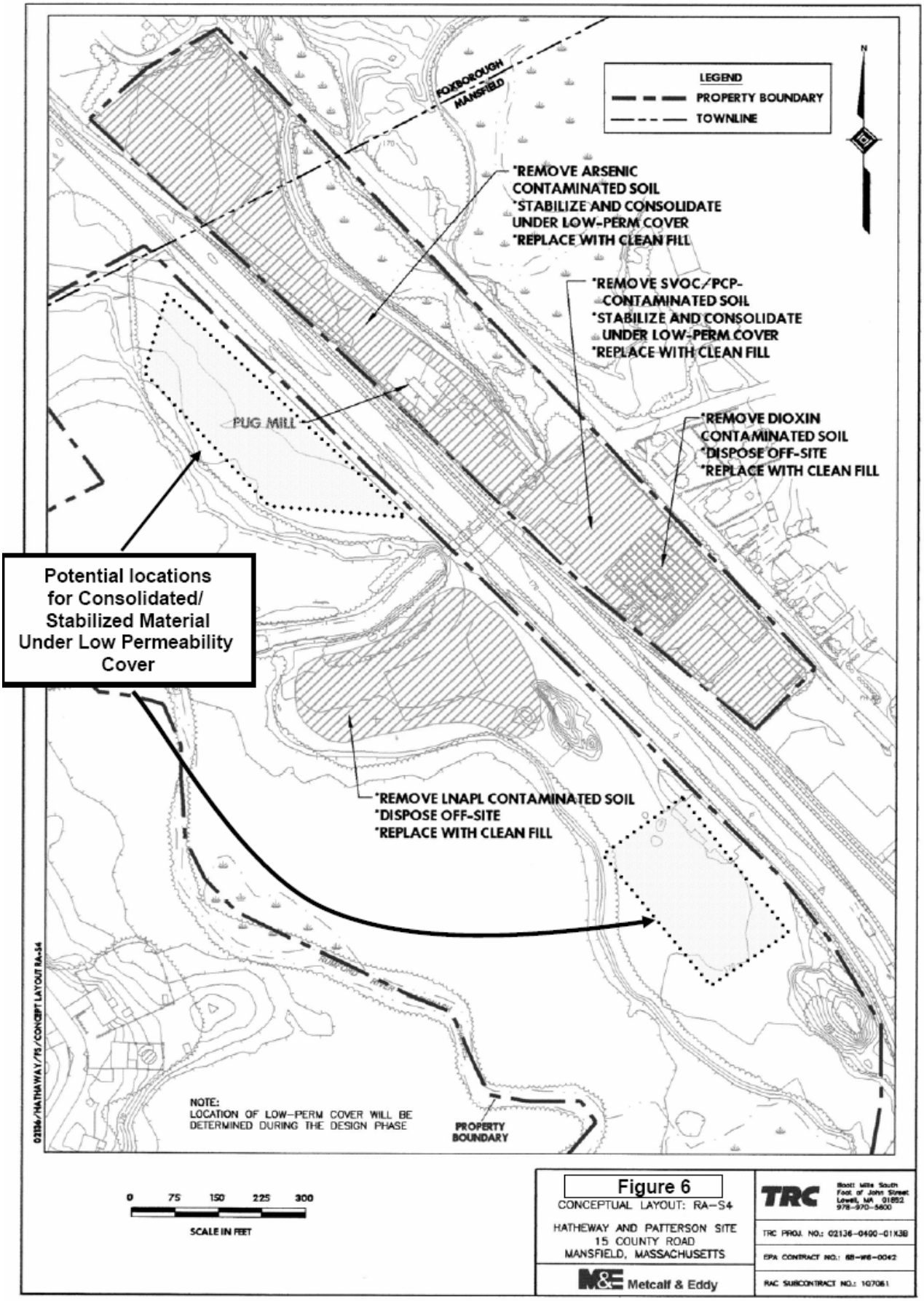
Metcalf & Eddy

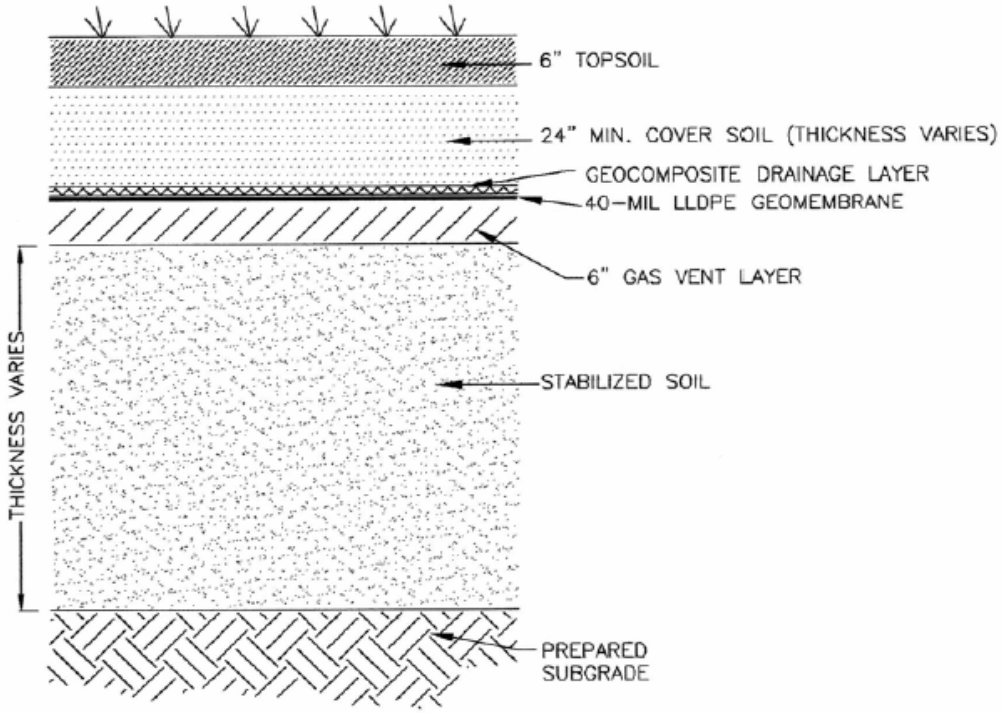
TRC
Scott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

TRC PROJ. NO.: 02136-0460-01K3B

EPA CONTRACT NO.: 68-W6-0042

RAC SUBCONTRACT NO.: 107061


LEGEND
PROPERTY BOUNDARY
TOWNLINE
N
FOXBOROUGH
MANSFIELD
*REMOVE ARSENIC CONTAMINATED SOIL
*STABILIZE AND CONSOLIDATE UNDER LOW-PERM COVER
*REPLACE WITH CLEAN FILL
*REMOVE SVOC/PCP-CONTAMINATED SOIL
*STABILIZE AND CONSOLIDATE UNDER LOW-PERM COVER
*REPLACE WITH CLEAN FILL
PUG MILL
*REMOVE DIOXIN CONTAMINATED SOIL
*DISPOSE OFF-SITE
*REPLACE WITH CLEAN FILL
Potential locations for Consolidated/ Stabilized Material Under Low Permeability Cover
*REMOVE LNAPL CONTAMINATED SOIL
*DISPOSE OFF-SITE
*REPLACE WITH CLEAN FILL
NOTE:
LOCATION OF LOW-PERM COVER WILL BE DETERMINED DURING THE DESIGN PHASE
PROPERTY BOUNDARY
0 75 150 225 300
SCALE IN FEET
Figure 6
CONCEPTUAL LAYOUT: RA-S4
HATHEWAY AND PATTERSON SITE
15 COUNTY ROAD
MANSFIELD, MASSACHUSETTS
TRC
Metcalf & Eddy



02136/HATHAWAY/FS/LOW_PERM

Figure 7

LOW PERMEABILITY COVER CROSS SECTION
HATHEWAY AND PATTERSON SITE
15 COUNTY ROAD
MANSFIELD, MASSACHUSETTS

Metcalf & Eddy

TRC
Scott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

TRC PROJ. NO.: 02136-0460-01K3B

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The Nine Criteria for Choosing a Cleanup Plan

Nine criteria are used to evaluate the cleanup alternatives and select a remedy. Of the nine, the first two, protection of human health and the environment and compliance with ARARs are considered threshold requirements that **must** be met by the selected remedy. EPA then balances its consideration of alternatives with respect to the other criteria; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. State and community concerns are modifying criteria and may prompt EPA to modify the preferred alternative or choose another alternative. Following are definitions of the nine criteria.

1. Overall protection of human health and the environment: Will it protect people and the plant and animal life on and near the site? EPA will not choose a plan that does not meet this basic criterion.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs): Does the alternative meet all federal and state environmental statutes, regulations and requirements? EPA will not choose a plan that does not meet this basic criterion.

3. Long-term effectiveness and permanence: Will the effects of the cleanup plan last or could contamination cause future risk?

4. Reduction of toxicity, mobility or volume through treatment: Does the alternative reduce the harmful effects of the contaminants, the spread of contaminants, and the amount of contaminated material through treatment?

5. Short-term effectiveness: How soon will site risks be adequately reduced? Could the cleanup cause short-term hazards to workers, residents or the environment?

6. Implementability: Is the alternative technically feasible? Are the right goods and services (i.e. treatment machinery, space at an approved disposal facility) available for the plan?

7. Cost: What is the total cost of an alternative over time?

8. State acceptance: Do state environmental agencies agree with EPA's proposal?

9. Community acceptance: What objections, suggestions or modifications does the public offer during the comment period?

EPA uses the nine criteria above to balance the advantages and disadvantages of various cleanup alternatives. As described below, EPA has evaluated how well each of the cleanup alternatives meets the first seven criteria. Once comments from the state and the community are received EPA will select the final cleanup plan. Table 1 below shows a summary of the Comparative Analysis that EPA performed.

Evaluation of Alternatives

***Overall Protection of Human Health and the Environment*:** Alternatives S1 and G1 would be the least protective of human health and the environment because there would be no cleanup of the Site. Unacceptable risks from contact with contaminated soil would remain, and offsite receptors would continue to be unprotected without a groundwater monitoring plan. Alternative S2 offers limited protection by restricting access to contaminated soil by fencing and deed restrictions against residential use of the Mansfield portion of the Site.

Alternatives G2, S3, S4 and S5 offer much greater levels of protection. All provide for long-term monitoring to ensure that offsite receptors will not be exposed to contaminated groundwater and that waste left in place will not leach contaminants to groundwater in violation of the aquifer standards. Alternatives S3 and S4 eliminate contact with soil through consolidation, treatment and a low permeability cover, with S3 having a slight advantage with thermal treatment and stabilization of contaminants before covering. Alternative S4 includes only stabilization before covering. Alternative S5 offers the highest degree of protection by excavating all contaminated soil and disposing of it offsite.

***Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs)*:** Alternatives S1 and G1 would not comply with chemical-specific ARARs for the Site. Alternative S2 will not comply with soil cleanup levels. All other alternatives comply with chemical, location and action-specific ARARs.

***Long-Term Effectiveness and Permanence*:** Alternatives S1 and G1 do not provide any long-term effectiveness or permanence since they do nothing to address Site risks.

Alternative G2 would monitor groundwater migration to ensure it does not reach offsite receptors. Alternatives S3, S4 and S5 permanently eliminate contact risk to dioxin contaminated soil through removal and offsite disposal. Both S4 and S5 also dispose of LNAPL soils offsite. S5 takes all other contaminated soils offsite and S3 and S4 apply treatment to soils before covering under a low permeability cap. These treatment processes and low permeability covers are proven technologies for effectively eliminating exposure to chemical waste material over the long-term. The cover would be regularly maintained to ensure that it remains effective in the long term.

***Reduction of Toxicity, Mobility or Volume through Treatment*:** Alternatives S1, S2, G1, G2, and S5 do not reduce toxicity, mobility or volume through treatment (although some material shipped offsite may require treatment prior to disposal).

Alternatives S3 and S4 permanently reduce toxicity and mobility of contaminants through various treatment technologies; S3 through thermal and stabilization,; S4 through stabilization only. Both include a low permeability cover that further minimizes mobility of contaminants by preventing water from coming into contact with waste material. All three alternatives eliminate toxicity, mobility and volume, although not through treatment, by offsite disposal of some or all of the contaminated soils that exceed cleanup levels. S5 does not include treatment.

None of the alternatives actively treat contaminated groundwater; however groundwater will be monitored to prevent it from

reaching offsite receptors in alternatives S3 through S5, as well as in G2.

Short-term Effectiveness: Because Alternatives S1 and G1 would not require any activities to be conducted, there would be no short-term impacts on the community or on-site workers. These alternatives would not adequately reduce risks in the short-term. Alternative S2 and G2 have minimal impacts on the community and on-site worker in that site activities consist only of installing several monitoring wells and periodic monitoring (G2) and fencing (S2). For S2, soil risk would remain on-site for many years, if not decades. For G2, the risk posed by groundwater would be addressed, but contaminants will remain on-site for many years as well. Both would control exposure through fencing and land use restrictions.

The remaining alternatives (S3, S4 and S5) have more substantial short term impacts on the community from increased truck/rail traffic, air emission during excavation and treatment processes and from materials handling for on-site workers. Overall, alternative S3 has the potential for the most air emissions impacts on the community and on-site workers because it involves the most processes (excavation, cover construction, and thermal treatment and stabilization) and it includes processing of air emissions from the thermal desorption process. Alternative S5 has more potential impacts on the community from truck/rail traffic than S3 based on the volume of equipment and material needed for excavation and offsite disposal of all excavated material but lower impacts from emissions other than dust since it lacks a treatment component. Alternative S4 results in slightly less air emission impacts on the community and on-site workers than S3 because it involves only stabilization, rather than thermal treatment; and S4 also has lower potential impacts than S5 because a portion of the material will not be moved off-site. Both S3 and S4 will take approximately 18-24 months to complete; S5 could be accomplished in approximately 15-20 months.

Implementability: Alternatives S1 and G1 are the easiest to implement because no remedial actions are required.

Alternatives S2 and G2 are also easy to implement because Site activities are limited to installing monitoring wells (an accepted and widely used practice) and fencing. Putting restrictions on land use will require cooperation of the land owners.

Alternatives S3, S4 and S5 involve some logistical complexity due to the large size of areas to be excavated, leaving less room to conduct treatment processes and, if necessary, dewatering. Alternative S-3 may have the highest logical challenges because of the additional thermal treatment component that the other alternatives do not include. The proximity to the rail tracks will require some complex engineering to ensure the integrity of the tracks during excavation. However, excavation and cover construction are reliable waste disposal technologies with proven histories of success. Both thermal desorption and stabilization are complex but have been successfully implemented to treat contaminants.

Cost: Alternatives S1 and G1 have no associated costs. Alternatives S2 and G2 are the least costly of the alternatives that require some action. Alternative S-5 in is generally the most expensive with costs of approximately $20,878,000 Alternatives S-3 and S-4 are in between, with costs of $13,412,000 and $10,723,000 respectively.

State Acceptance: MADEP has reviewed and approved of the preferred cleanup alternative.

***Community Acceptance*:** Community acceptance will be evaluated based on comments received.

During the 30-day formal comment period, EPA will accept written comments and hold a public hearing to accept formal verbal comments.

Table 1: Comparative Analysis Summary

	Protection of Human Health and Environment	ARARs	Long Term Effectiveness	Reduction of TMV	Short Term Effectiveness	Implementability	Cost
S1	○	○	○	○	○	●	●
S2	○	○	○	○	○	●	●
S3	●	●	●	◐	◐	◐	◐
S4	●	●	●	◐	●	●	◐
S5	●	●	●	◐	○	●	○
G1	○	○	○	○	○	●	●
G2	●	●	●	◐	●	●	●

Legend:
● Best meets this Criterion
◐ Partially meets this Criterion
○ Does not meet this Criterion

***Impacts to Wetlands, Floodplains, and Potential Vernal Pools*.**

A portion of the Hatheway & Patterson Site is located within the 100 year floodplain. There are wetlands on Site as well as depressions which may meet the characteristics of vernal pools (as defined by the Commonwealth of Massachusetts).

Section 404 of the Clean Water Act and Executive Order 11990 (Protection of Wetlands) require a determination that federal actions involving dredging and filling or activities in wetlands to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Through its analysis of the alternatives, EPA has determined that because significant, high level contamination exists in the wetland areas of the Site, there is no practicable alternative to conducting work in the wetlands and potentially in habitat similar to that of vernal pools (further studies during design will determine whether or not sediment/surface water in these areas pose a risk to ecological receptors at the Site). The data collected pursuant to the Remedial Investigation and the results of the Human Health Risk Assessment support this determination. Once EPA determines that there is no practical alternative to conducting work in wetlands, EPA is then required to minimize potential harm or avoid adverse effects to the extent practicable. Best management practices will be used throughout the Site to minimize adverse impacts on the wetlands, wildlife and its habitat. Damage to these wetlands will be mitigated through erosion control measures and proper re-grading and re-vegetation of the impacted area with indigenous species. Following excavation activities, wetlands will be restored or replicated consistent with the requirements of the federal and state wetlands protection laws.

EPA will, to the extent practical, locate the consolidated and covered waste on an upland area away from wetlands to minimize adverse impacts. If an ecological risk is found in the areas of habitat similar to vernal pools, remedial activities may include excavating the contaminated sediment or filling the depression with clean backfill, depending on whether the source of the contamination is found to be from surface water or groundwater. If disrupted, vernal pools will be replaced elsewhere on the Site. As required, EPA is seeking comment on this proposed determination.

What is a Formal Comment?

To make a formal comment you need only speak during the public hearing on Thursday, July 7, 2005 or submit a written comment during the comment period, which begins on June 17, 2005 and ends on July 18, 2005.

Federal regulations require EPA to distinguish between "formal" and "informal" comments. While EPA uses your comments throughout the cleanup process, EPA is required to respond to formal comments on the proposed plan in writing only. EPA will not respond to your comments during the formal hearing on July 7, 2005.

The fact that EPA responds to formal comments in writing only does not mean that EPA cannot answer questions. Once the meeting moderator announces that the formal hearing portion of the meeting is closed, EPA can respond to informal questions.

EPA will review the transcript of all formal comments received at the hearing, and all written comments received during the formal comment period, before making a final cleanup decision. EPA will then prepare a written response to all the formal written and oral comments received.

Your formal comment will become part of the official public record. The transcript of comments and EPA's written responses will be issued in a document called a Responsiveness Summary when EPA releases the final cleanup decision.

Next Steps

This fall, EPA expects to have reviewed all comments and signed a Record of Decision document describing the chosen cleanup plan. The Record of Decision and a summary of responses to public comments will them be made available to the public at the site information repositories listed here, as well as on the EPA Hatheway & Patterson web site noted on this page.

For More Information

Site Contacts

If you have any questions about the site or would like more information, you may call or write to:

Dave Lederer, Remedial Project Manager
US EPA
One Congress Street, Suite 1100 (HBO)
Boston, MA 02114
(617) 918-1325
lederer.dave@epa.gov
or

Pamela Harting-Barrat, Community Involvement
US EPA
One Congress Street, Suite 1100 (HBS)
Boston, MA 02114
(617) 918-1930
Harting-Barrat.pamela@epa.gov

Information Repositories

This publication summarizes a number of reports and studies. All of the technical reports and studies prepared to date for the site are available at the following information repositories:

Mansfield Public Library
255 Hope Street
Mansfield, MA 02048
508-261-7380

EPA Records Center
1 Congress Street
Boston, MA 02114
Please call to schedule an appointment
(617) 918-1440

Information is also available for review on the Internet:
http://www.epa.gov/region01/superfund/sites/hatheway

All documents may be downloaded and printed. Adobe Acrobat Reader is required.

Frequently Asked Questions:

QUESTION: What happens after the remedy is selected?

ANSWER: After EPA finalizes the selection of a cleanup plan in a (ROD), EPA will begin the preparation of detailed plans and specification (the Remedial Design) to hire a contractor to carry out the cleanup work. The Remedial Design is expected to take one year to complete. As the design nears completion, EPA will request funding from our National Risk-Based Prioritization Panel, which provides cleanup (Remedial Action) funding for Superfund projects across the country.

QUESTION: How does EPA decide which sites receive construction funding and which do not?

ANSWER: The highest priority is given to funding emergencies which pose immediate threats to human health and the environment. After emergencies and ongoing construction actions are funded, EPA looks at funding new construction work. New construction actions are ranked according to the risk posed by the site and the present and future costs of the work. This entire process is done through EPA's National Risk-Based Priority Panel evaluation process. In addition, Superfund has a commitment to complete construction at sites. The results of the Panel's evaluation are taken into consideration along with the ability to complete construction at a site.

QUESTION: How does EPA select new cleanup projects to receive funding?

ANSWER: EPA established the National Risk-Based Priority Panel to review and evaluate Superfund cleanup construction projects that are expected to be ready to proceed during a fiscal year. The Panel is comprised of national program experts from each EPA Regional office and Headquarters. They evaluate each new project with respect to weighted criteria reflecting the relative risk associated with the site conditions. In evaluating sites, the panel considers information such as: the contaminants at the site; the potential for human exposure (both current and future); and the potential for ecological impacts (both current and future). The results of the Panel's evaluation are taken into consideration along with other factors including the site schedule for achieving construction completion.

GLOSSARY OF TERMS AND ACRONYMS

ARARS	"Applicable, or Relevant and Appropriate Requirements"
AWQC	"Aquatic Water Quality Criteria"
BERA	Baseline Environmental Risk Assessment
CERCLA	Comprehensive Environmental Response Compensation and Liability Act, the 'Superfund' law.
COPC	Contaminants of Potential Concern
LNAPL	Light Non-Aqeous Phase Liquid
MCLs	Maximum Contaminants Levels, set for drinking water
MCP	Massachussetts Contingency Plan
PCP	Pentachlorophenol
PRG	Preliminary Remediation Goal
RAFU	Reasonably Anticipated Future Use
RAO	Response Action Objective
ROD	Record of Decision
TEQ (dioxin)	Toxicity Equivalent

Send us Your Comments

You may provide EPA with your written comments about the Proposed Plan for the Hatheway & Patterson Superfund Site. You can use the form below to send written comments. Please mail this form and any additional written comments, postmarked no later than July 18, 2005 to:

Dave Lederer

U.S. EPA

1 Congress St., Suite 1100 (HBO)

Boston MA 02114-2023

Fax: 617-918-0325

e-mail: lederer.dave@epa.gov

Comments Submitted by: _____

Attach additional sheets if necessary